[COMMITTEE PRINT]

INTERNATIONAL STANDARDIZATION: THE FEDERAL ROLE

REPORT

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FOR THE

SUBCOMMITTEE ON
SCIENCE, RESEARCH AND TECHNOLOGY

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LETTER OF TRANSMITTAL

House of Representatives,
Committee on Science, Space,
and Technology
Washington, D.C. 20515

July 11, 1989

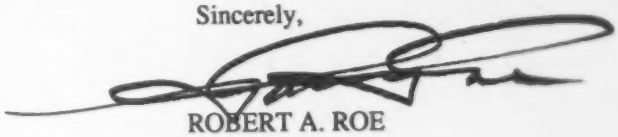
TO ALL MEMBERS, COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

I am transmitting herewith a report entitled, "International Standardization: The Federal Role," prepared by the Congressional Research Service.

This report provides background information on the importance of standards in the facilitation of domestic commerce and international trade, and focuses on the issue of what role the Federal Government should play in international standardization activities.

I commend this report to the attention of all Members concerned with United States' access to overseas markets and its ability to compete in them.

Sincerely,



ROBERT A. ROE
Chairman

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LETTER OF SUBMITTAL

June 16, 1989

Honorable Robert A. Roe
Chairman, Committee on Science, Space and Technology
House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

I am pleased to forward the enclosed report entitled, *International Standardization: The Federal Role*, undertaken at the request of the Committee on Science, Space and Technology. It was prepared by Lennard G. Kruger, Analyst in Science and Technology, Science Policy Research Division.

This study addresses concerns that U.S. interests are not adequately represented in the formulation of international voluntary technical standards, and that this lack of influence has the potential of impeding U.S. access to overseas markets. The Federal role in international standardization is examined, with a particular focus on the role of the National Institute of Standards and Technology in enhancing the capability of U.S. industry to provide standards assistance to developing countries.

On behalf of the Congressional Research Service, I would like to express my appreciation for the opportunity to undertake this timely and challenging assignment.

Sincerely,

Joseph E. Ross
Director

International Standardization: The Federal Role

Lennard G. Kruger
Analyst in Science and Technology
Science Policy Research Division

April 14, 1989

(VII)

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I. INTRODUCTION

In 1974, the Science Policy Research Division of CRS issued a report to Congress entitled, *Voluntary Industrial Standards in the United States: An Overview of their Evolution and Significance for the Congress.* The report pointed out that "voluntary international standards have become a troublesome form of nontariff trade barrier. Export minded American companies have recognized this fact for some time and are deeply concerned about such barriers to their products."[1]

An example of this concern can be seen in a 1982 study commissioned by the Aerospace Industries Association (AIA). AIA's *Impact of International Standardization Trends on the U.S. Aerospace Industry* concluded:

> Projecting the trends, a look into the future suggests that international standards and certification will become increasingly important factors with respect to development, production, procurement and support of aerospace systems and equipment. . . . U.S. military and industry specifications and standards, which have dominated world aerospace for decades, will have a "run for their money" in the future marketplace against regional, international and treaty organization standards. Those U.S. industrial sectors that do not participate effectively in organizations and activities directed toward specifying and certifying products are apt to be at a disadvantage.[2]

Participation in standards-making could be especially critical in determining the success of opening new markets in developing countries. Many industrialized countries have recognized this fact and have acted to

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[1]U.S. Congress. House. Committee on Science and Astronautics. Voluntary Industrial Standards in the United States. Report to the Subcommittee on Science, Research, and Development by the Science Policy Research Division, Congressional Research Service. Committee Print, 93rd Cong., 2nd Sess. Washington, U.S. Govt. Print. Off., 1974. p. 63.

[2]Aerospace Industries Association of America. Impact of International Standardization Trends on the U.S. Aerospace Industry. June 1982. p. 8.

promote their industrial standards in developing countries as well as in international standardization organizations. A recent report from the National Institute of Standards and Technology (NIST), suggested that U.S. standards are not being promoted as aggressively as those of other countries. The consequences for American industries seeking to export could be dire. The NIST report warns:

> If U.S. interests are not adequately represented in international standardization forums, then there is great danger that specifications written for procurements by developing nations will be less favorable to the U.S. in rapidly growing markets. This concern becomes more significant as the world economy encourages a progressively protectionist attitude toward trade matters.[3]

Concern surfaced in the 100th Congress over American industry's ability to adequately represent its interests in the standardization activities of developing countries. The NIST Authorization Act for FY 1989 (P.L. 100-519) seeks to widen the scope of NIST's assistance to developing countries in the area of standardization. While the program will be funded by voluntary contributions from industry, it raises the question of whether the Federal Government should become more involved in international and foreign national standardization activities.

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[3]Cooke, Patrick. U.S. Department of Commerce. National Bureau of Standards. A Review of U.S. Participation in International Standards Activities. NBSIR 88-3698, January 1988. Washington, 1988. p. 16.

II. WHAT ARE STANDARDS AND WHY ARE THEY IMPORTANT?

There is no commonly accepted definition of a "standard." In the broadest possible sense, however, standards can be seen as "a category of documents whose function is to control some aspect of human endeavor."[4] Obviously, it is a field of almost unlimited complexity and scope. This paper is concerned primarily with engineering standards. According to the National Bureau of Standards:

> An engineering standard is a technological practice described in a document to assure dimensional compatibility, quality and performance, uniformity of evaluation procedure, or uniformity of engineering language. Typical examples are documents prescribing screw thread dimensions, clothing sizes, chemical composition and mechanical properties of steel, methods of test for sulfur in oil, and codes for highway signs.[5]

A standard can be voluntarily set through a consensus process involving the various interests affected by that standard, or it can be prescribed as a law or regulation by a government. Standardization offers many acknowledged benefits, including: an assurance that different parts and components will be compatible within a "system," a uniform level of product quality and safety, a means for implementing new technology, and many others. Standards serve to facilitate domestic commerce and international trade.

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[4]Sullivan, Charles D. Standards and Standardization. New York, Marcel Dekker, 1983. p. 2.

[5]U.S. Department of Commerce. National Bureau of Standards. U.S. Metric Study Report: International Standards. Washington, U.S. Govt. Print. Off., 1970. p. 54.

However, the way a country or a company applies or enforces standards can sometimes create barriers to international trade. Some examples:

- In the 1960's, three European countries formed a regional electrical certification system. The system was closed to products from U.S. manufacturers, who were forced to have their products certified in each individual country where they wished to market, a time consuming and costly process.[6]

- On August 17, 1984 the Fertilizer Institute filed a petition under Section 301 of the Trade Act of 1974 alleging that the European Economic Community (EEC) adopted a standard in 1976 imposing a 93 percent water solubility requirement on triple superphosphate in order for the product to be labelled "EEC fertilizer." The petition alleged that "there is no agronomic justification for this standard and the standard has had the effect of creating an unnecessary obstacle to international trade."[7]

- On February 26, 1988 the Environmental Protection Agency (EPA) promulgated performance standards limiting emissions of residential wood heaters. The regulation requires that certification tests be conducted within the continental United States. During the comment period, a foreign trade official argued that this requirement constitutes a "technical barrier to trade, since it provides considerable advantages to manufacturers located in the U.S."[8]

- The European Community (EC) is planning to form a single integrated market with harmonized[9] standards and regulations by 1992. According to NIST, "the EC legislation dealing with standardization is likely to have a profound effect on U.S. exports since harmonization directives may be framed, albeit inadvertently,

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[6]Layton, Robin R. Standards Code Helps Exporters by Eliminating Barriers to Trade. Business America, April 4, 1983. p. 15.

[7]Office of the United States Trade Representative. Federal Register, v. 49, no. 198, Oct. 11, 1984. p. 39937.

[8]Environmental Protection Agency. Federal Register, v. 53, no. 38, Feb. 26, 1988. p. 5868.

[9]To harmonize standards is to make the standards of different countries the same in content although their formats may differ.

so as to exclude or hinder the entry of U.S. products in the European market.[10]

Testing and certification are perhaps the most prevalent means of using standards as a trade barrier. In fact, the "great majority" of standards-related comments received by the U.S. Government from American exporters have concerned the nonacceptance by foreign governments of test data generated in the United States and the burdensome and time-consuming approval and certification procedures that are required for product acceptance in foreign markets.[11]

Worldwide concern over the use of standards as technical trade barriers led to the Agreement on Technical Barriers to Trade which was negotiated and accepted during the Tokyo Round of the multilateral trade negotiations which took place between 1975 and 1979 under the auspices of the General Agreement on Tariffs and Trade (GATT). Thirty-eight countries, including the United States have signed the agreement, popularly known as the Standards Code. Most Members are either industrialized or newly industrialized countries. As a general principle, the Standards Code stipulates that "parties shall ensure that technical regulations and standards are not prepared, adopted or applied with a view to creating obstacles to international

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[10]Cooke, Patrick. U.S. Department of Commerce. National Bureau of Standards. A Summary of the New European Community Approach to Standards Development. NBSIR 88-3793-1, August 1988. Washington, 1988. p. 4.

[11]U.S. Departments of Agriculture, State, and Commerce and the U.S. Trade Representative. Second Triennial Report to the U.S. Congress on the Agreement on Technical Barriers to Trade. Washington, U.S. Govt. Print. Off., 1986. p. 16.

trade." At the same time, however, the Code acknowledges each nation's right to adopt standards which protect its own interests such as public health, the environment, national security, quality of exports, and others.[12] While the GATT Standards Code has improved information flow between countries on their respective standardization activities, it does not have the force or stature necessary to effectively prevent the use of standards as trade barriers. In fact, a survey on standards and international trade conducted by the American Society for Testing and Materials (ASTM) concluded that "the Standards Code does not loom large in the thinking of European standards users."[13]

In this chapter, we have defined standards and shown how they can be used as trade barriers. A final point is necessary. Standards are obviously one of many factors which affect international trade. Currency, labor costs, government subsidies, tariffs, and other factors all play major roles in determining the nature and characteristics of international trade and the United States trade balance.

An analysis of how standardization affects trade as compared to other factors is beyond the scope of this paper. However, it should be noted that it is extremely difficult to determine the effect of nontariff measures (NTMs)

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[12]For the complete text of the Standards Code, see Appendix I. For further discussion of the Standards Code, see: Abelson, Donald S. The Standards Code: Current status and future prospects. Standardization News, June 1987. p. 34.

[13]Gorton, Keith, Brown, Peter, and Walter Cropper. The Use of ASTM Standards in International Trade. ASTM Standardization News, May 1984. p. 19.

on trade with any degree of precision. A 1985 General Accounting Office study acknowledged this difficulty, explaining that:

> Product standards are difficult NTMs to quantify, because they are so widespread and because quantifying them generally involves estimating the effects of a large number of small qualitative changes on the supply and demand for a product. Estimating the cumulative effect of so many small changes, each of which must be estimated independently, has so far proven extremely difficult for researchers.[14]

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[14]U.S. General Accounting Office. The Difficulty of Quantifying Non-Tariff Measures Affecting Trade; Report to the Chairman, Subcommittee on International Economic Policy, Oceans and Environment, Senate Committee on Foreign Relations. NSIAD-85-133, Sept. 30, 1985. Washington, 1985. p.13.

III. SETTING STANDARDS: THE UNITED STATES AND THE WORLD

There are standards for every conceivable product and industry, both in the United States and throughout the world. Standardization is a highly fragmented activity. Most countries maintain their own standards-making organizations, which have developed an estimated 500,000 national standards worldwide.[15] Table I lists the number of standards developed by leading industrialized nations. Often different standards for the same product can impede trade between countries. To address this problem, international standardization organizations have been established to "harmonize" different national standards for a given product into one international standard all trading partners can agree on.

Table I -- World Standards Development

Country	Number of Standards
USA	89,000
USSR	88,000
West Germany	30,300
France	18,000
P.R. China	15,000
India	14,000
United Kingdom	11,600
Japan	8,800
Italy	7,000
Sweden	7,000
Spain	7,000
Canada	6,000

Source: Robert Toth, R.B. Toth Associates, March 1989

[15]Robert Toth. R.B. Toth Associates.

At present there are several hundred international and regional organizations conducting standards related activities -- NBS listed 272 organizations in a report of a survey conducted in 1983.[16] However, the two major private sector international standardization organizations are: the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). ISO has developed 7107 standards, and covers all fields except electrical and electronic standards, which are developed by IEC (2123 standards).[17]

It would be a mistake to assume that ISO and IEC standards are automatically impartial and unbiased, simply because they are "international." As Lawrence D. Eicher, secretary-general of ISO cautions:

> . . . it is of key importance to remember that the organizations are no more separate from national influence than is the mythical international marketplace. The movement to achieve and to maintain a viable set of international standards has been built on the progressively increasing international consciousness of national standards organizations. ISO and IEC are, in fact, entirely dependent on their national members. Everything that happens in the two organizations happens because at least one nation suggested it and 75 percent of the rest concurred with a decision resulting from negotiation."[18]

Each nation is represented in ISO and IEC by a national standardization organization, called a member body, which tries to advance its country's

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[16]Breitenberg, Maureen. U.S. Department of Commerce. National Bureau of Standards. Directory of International And Regional Organizations Conducting Standards-Related Activities. NBS Special Publication 649, April 1983. Washington, 1983. p. V.

[17]Toth, Robert. Private communication, March 13, 1989.

[18]Eicher, Lawrence D. Standards for Expanding Markets. ASTM Standardization News, June 1987. p. 26.

interests throughout the process of developing international standards. The budgets, size, and government funding of member bodies vary greatly (see Table II). Most member bodies in ISO are either government institutions or organizations incorporated by public law. The member body representing the United States in both ISO and IEC is the American National Standards Institute (ANSI). It is one of the few private sector member bodies, and it is the only member body (except for Switzerland) that receives no government funding.

Table II -- ISO Member Bodies Data

Country	Annual Budget ($ millions)	Government Grant (% of revenue)	Total Staff (direct/indirect)
Canada	11.5	89	77
Japan	5.2	100	93/161
W. Germany	40.9	20	580/170
Mexico	14.0	100	850/25
United Kingdom	44.7	17	1042/3
Korea	0.9	100	84/90
France	18.9	41	440/250
Italy	1.5	25	45/80
Netherlands	7.9	17	120/150
Brazil	2.6	30	184/30
United States	6.2	0	105

Source: ISO Member Bodies, Fifth Ed., 1985

Unlike most countries, the U.S. does not rely on one national standards organization to act as an official umbrella for all standardization activities. While ANSI is the member body that represents the United States in the ISO and the IEC, only about 35 percent of the over 600 private organizations that conduct voluntary standardization activities in the U.S. belong to ANSI. At

present, ANSI has adopted about 20 percent of the approximately 39,000 private standards as American National Standards.

Meanwhile, the Federal Government develops its own standards, mostly procurement specifications developed by the Department of Defense (DOD). Since 1964, the number of standards (both government and private) in the U.S has risen from 53,200 to 89,000, an increase of 65 percent. The number of private sector standards alone have risen 180 percent since 1964. Table III characterizes the different kinds of organizations that develop standards in the U.S., while Table IV lists the leading private sector developers of voluntary standards. Standardization poses a considerable expense for private industry; a 1977 study by the National Research Council estimated the annual cost of preparing private sector specifications and standards at $320 million.[19] Companies are willing to bear this expense because it is in their interest to do so. In some respects, a company's investment in standardization can be compared to investment in research and development. It is a serious commitment that is essential to the long term health of the company. Often, a company or industry in trouble will cut its standardization budget, just as it decreases R & D expenditures.

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[19]National Materials Advisory Board. National Research Council. Materials and Process Specifications and Standards (NMAB-330). Washington, 1977. p. 83.

Table III -- Standards Development in the U.S.

	Number of Standards
Government	
Defense	37,000
Federal (GSA)	5,300
Other	8,000
(57 percent)	50,300
Private Sector	
Scientific & Professional	15,100
Trade Association	13,850
Standards Writing	9,750
(43 percent)	38,700
Total	89,000

Source: Robert Toth, R.B. Toth Associates, March 1989

Table IV -- Developers of Industrial Standards

	No. of Standards
American Society for Testing and Materials	8,400
Society of Automotive Engineers	5,000
Aerospace Industries Assn.	3,000
American National Standards Institute	1,510
Association of American Railways	1,350
American Petroleum Institute	880
American Society of Mechanical Engineers	745
Underwriters Labs	600
Electronic Industries Assn.	580
Institute of Electrical and Electronics Engineers	530
American Railway Engineers Assn.	300
Technical Assn. of the Pulp & Paper Industry	290
National Fire Protection Assn.	275
Factory Mutual	110

Source: Robert Toth, R.B. Toth Associates, March 1989

IV. INTERNATIONAL STANDARDIZATION: CAN THE U.S. COMPETE?

Following World War II, U.S. standards were preeminent throughout the world. In general, if a product met American standards, it could be sold anywhere. For this reason, there was little incentive for U.S. industry to become involved in international standardization activities. However, by the 1960's, foreign and international standards began to compete more and more with American standards, and this led U.S. industry to heighten its involvement in international standards making.[20]

It is very difficult to make a general assessment of how the United States is faring in the international standardization process. Hundreds of different industries conduct business in thousands of different products and services. Some American industries and companies participate in international standardization activities and some do not. For some products, American standards continue to be widely used and accepted throughout the world; for others, American standards are becoming less influential. This chapter will explore U.S. and foreign activities in two specific arenas of international standardization: participation in international standards organizations and standardization assistance for developing countries.

U.S. PARTICIPATION IN ISO AND IEC

As mentioned in the previous chapter, ISO and IEC are the two major international standardization organizations that deal with voluntary industrial

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[20]Rankine, L. John. Leadership and Responsibility in International Standardization. ASTM Standardization News, December 1984. p. 21.

standards. Both the ISO and the IEC are divided into technical committees, which focus on developing international standards for a particular technology or product category. The ISO has 164 Technical Committees, 645 Subcommittees, and 1536 Working Groups, while the IEC has 80 Technical Committees and 124 Subcommittees.[21] Some examples are: ISO Technical Committees on nuclear energy, sewing machines, and photography; and IEC Technical Committees on microwave systems, video recording, and electric cables.

Any member country is free to participate on any committee. One measure of a country's level of involvement in international standardization is its level of participation on ISO and IEC Technical Committees. Each committee is headed by a secretariat. The country that holds a secretariat must bear more of the financial burden of supporting the committee's work; but it also has more influence on the standards developed by the committee. U.S. participation in ISO and IEC as measured by secretariats held (in technical committees, subcommittees and working groups) has remained fairly constant since 1966, but the percentage of secretariats held continues to be less than several Western European nations. For example, in 1966 the U.S. ranked third in ISO secretariats (with 9 percent of total); in 1988 the U.S. ranked fourth (12.5 percent) behind France (15.6 percent), United Kingdom (17.0 percent), and West Germany (17.6 percent). In the IEC, the U.S. ranks

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[21]U.S. Department of Commerce. National Bureau of Standards. A Review of U.S. Participation in International Standards Activities. NBSIR 88-3698, January 1988. Washington, 1988. p. 9, 12.

second in tecnical committee and subcommittee secretariats, with 16 percent. France holds 19 percent.[22]

On the other hand, it should be noted that the "quality" of secretariats held can be as important as the quantity. The U.S. holds secretariats in many of the more economically significant areas such as aerospace, petroleum products, and information processing systems. ISO and IEC have formed joint Technical Committees in particularly significant areas such as telecommunications. Among the joint ISO/IEC committees, the U.S. holds 26 percent, the highest percentage of secretariats.[23]

According to NIST, the U.S. "is the only major industrialized nation that has not taken action to provide for governmental representation in the affairs of ISO,"[24] and as was shown in Table II, the U.S. is virtually the only country that provides no direct government financial support for its member body (ANSI) in ISO and IEC. ANSI sends American representatives to ISO and IEC Technical Committees; these representatives are selected from relevant organizations (trade associations, industry groups, government agencies, ASTM Committees, etc.). Ultimately, it is U.S. companies themselves, either acting individually or jointly with other companies representing a certain industry, that determine the level of U.S. participation in ISO and IEC.

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[22]Ibid., p. 22-23.

[23]ISO Memento 1988. p. 135.

[24]U.S. Department of Commerce. National Bureau of Standards. A Review of U.S. Participation in International Standards Activities. NBSIR 88-3698, January 1988. Washington, 1988. p. 10.

Participation in ISO and IEC requires time and expense. As William McAdam, former President of the US National Committee (an arm of ANSI which represents the U.S. in the IEC) explains:

> ISO and IEC do not provide expenses for member bodies, chairmen or presidents of committees, secretariats, organizations supporting representatives, or the representatives themselves. The member bodies and the organizations supporting them have to make their own decisions about the ever growing costs for international standardization. In most cases, the individuals involved in the work will usually be reimbursed by their employers. In trade associations and other groups, the interested parties sometimes develop special funds for particular standardization projects, but that is limited. Generally, when employers approve the activities involved they will pay the costs.[25]

The lower level of U.S. participation in ISO and IEC (compared to Western European countries) is due to a reluctance of some U.S. industries to bear this expense. It should be noted that of the 89,000 standards used in the U.S. only 17 are directly adopted ISO standards. No IEC standards have been adopted. By contrast, ISO or IEC standards comprise 43 percent of Danish national standards; 37 percent of French standards; 22 percent of Dutch standards; 16 percent of British standards; and 5 percent of West German standards. Because international standards are hardly used in the U.S., many American firms prefer to concentrate on national and company standards. Corporate investments in standards activities must compete with investments for a range of other activities such as R & D or plant

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[25]McAdams, William A. Standards and the United States. ASTM Standardization News, December 1986. p. 43.

modernization. Often it is only the biggest and most internationally oriented companies that can justify the expense of participating in ISO and IEC.[26]

Since the U.S. 1) lags behind Western European countries in ISO and IEC secretariats held and 2) lacks formal government representation and support for ISO and IEC, does this necessarily imply that the U.S. is not able to adequately attend to its interests in the international standardization process? Again, the diversity of industries, products, and technologies involved make it impossible to generalize. Boiler and pressure vessel codes of the American Society of Mechanical Engineers (ASME) and ASTM standards on petroleum products and plastics enjoy worldwide acceptance.[27] Indeed, some industries have played a very active role in promoting their interests in international standardization. For example, the American Petroleum Institute (API), participates heavily in ISO Technical Committees. According to API, 74 percent of petroleum product specifications and measurement standards issued by ISO are identical to U.S. standards. Currently, API is starting to promote ISO adoption of its offshore oil equipment standards.[28]

Other industries, by contrast, have not maintained support for ISO and IEC activities. At a hearing held by the House Science, Space and Technology Committee, Harry Lunt, Chairman of the ASTM Committee A-1 on Steel,

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[26]Cropper, Walter V. International Standards for the Global Economy. ASTM Standardization News, August 1986. p. 45.

[27]U.S. Department of Commerce. National Bureau of Standards. A Review of U.S. Participation in International Standards Activities. NBSIR 88-3698, January 1988. Washington, 1988. p. 21.

[28]Sawyer, C. Thomas. Vice President for Industry Affairs, American Petroleum Institute. Personal communication, October 28, 1988.

Stainless Steel and Related Alloys, testified that in mid-1986 the American Iron and Steel Institute (AISI) ceased funding ISO activities. In past years, AISI had funded travel of delegates to the ISO Technical Committee on Steel, while also funding the U.S. held secretariat of the ISO Subcommittee on Sheet Steel. ASTM Committee A-1 continues to operate these ISO activities with alternate funding.[29] However, after the withdrawal of funding by AISI, ANSI gave up the secretariat for the ISO Technical Committee on Steel, and the secretariat was subsequently accepted by Japan.

According to Mr. Lunt, AISI's withdrawal of funding for ISO activities could be very damaging to the steel industry:

> The standards are the rules that the seller has to conform to, and the standards writing activity is proceeding whether the steel companies of the United States participate or not; the rules are being written by others, and if these rules turn out to be difficult for domestic producers to conform to, they will be at a competitive disadvantage to their competitors overseas. It seems to me that it is vitally important for the producers in the United States to participate in standards writing activities to be sure that the standards don't write them out of the market or increase their production costs.[30]

While the number of international standards are growing -- available ISO and IEC standards have increased from approximately 910 in 1966 to 9900 in 1989[31] -- their impact and influence should be put into perspective. The

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[29]U.S. Congress. House. Committee on Science, Space, and Technology. Subcommittee on Science, Research and Technology. Steel Research and Markets of the Future. Hearings, 100th Cong., 2nd Sess., Aug. 4, 1988. Washington, U.S. Govt. Print. Off., 1988. p. 74-75.

[30]Ibid., p. 103.

[31]Remarks of Dr. Lawrence Eicher, Secretary General of ISO at ANSI Annual Public Conference. March 2, 1989.

number of ISO and IEC standards is a small percentage of all standards in place in the industrialized nations. In the steel industry for example, ASTM and DIN (West German) standards, not ISO standards, are currently predominant in international trade. The development of an international standard by ISO or IEC does not assure its use in the marketplace. A study sponsored by ASTM and conducted by Humberside College in Hull, England surveyed businesses in four European countries on their standards use. Interestingly, the survey found that compared with German, British, and ASTM standards, ISO standards were deemed "most acceptable" but were "used the least and [were] regarded of less importance."[32] One of the study's authors concluded that:

> A great number of the Humberside Study respondents believe that international standard status is conferred not by institutional anointment but by widespread use and acceptance in the marketplace. Accordingly, there is a trend toward more extensive use of American, British, German, and Japanese standards in foreign trade, regardless of the fact that few are ISO and IEC standards.[33]

The adoption of international standards varies greatly from industry to industry. Ultimately, the amount of U.S. participation in ISO and IEC is a matter for each industry to decide.

STANDARDIZATION ASSISTANCE FOR DEVELOPING COUNTRIES

According to the National Institute of Standards and Technology (NIST), industrialized countries "have recognized the direct relationship between their

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[32]Gorton, Keith, Peter Brown and Walter Cropper. The Use of ASTM Standards in International Trade: Part 2. ASTM Standardization News, June 1984. p. 20.

[33]Cropper, Walter V. International Standards for the Global Economy. ASTM Standardization News, August 1986. p. 55.

export trade and the standards developed or adopted in developing countries."[34] NIST points out that Western European countries, in particular, "have moved quickly to help standards-making bodies of other nations develop their standards and standards-related activities" thereby providing a "bias favoring their own economic position."[35]

Standards Development in Saudi Arabia

A recent example is in Saudi Arabia, where the Saudi government is relying on industrialized countries to help them formulate standards which could eventually be used to exclude nonconforming goods from entering the Saudi market. According to American businesses exporting goods to Saudi Arabia, "since 1976 the Saudi Arabian Standards Organization (SASO) has developed a wide array of mandatory national standards relying primarily on government-to-government technical assistance provided gratis by Japan France, Great Britain, [West] Germany and other countries."[36]

By contrast, there are no American technical experts working at SASO headquarters. Reporting on a trip to Saudi Arabia in 1986, NIST highlighted the concerns of the American Embassy in Riyadh over this situation:

> The Embassy pointed out that, lacking U.S. technical standards assistance to SASO, the support being provided by the U.K., France, West Germany, Japan and India, as well as Australia and New

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[34]U.S. Department of Commerce. National Bureau of Standards. A Review of U.S. Participation in International Standards Activities. NBSIR 88-3698, January 1988. Washington, 1988. p. 15-16.

[35]Ibid., p. 16.

[36]The American Businessmen's Groups of the Gulf Arab States. Saudi Arabian Product Standards: A Commercial Opportunity for the United States. May 1988.

Zealand, could have a negative impact on the ability of U.S. manufacturers to continue to market their products in the Gulf.[37]

Already, there have been instances where standards have hindered U.S. exports to Saudi Arabia. In January 1988, the Saudi government issued a directive that imported products must have a SASO certificate of conformity. As a result, the General Electric Company had $1 million worth of appliances held by Saudi customs because certificates of conformity to SASO standards were not provided.[38]

Other specific consequences of incompatible standards between U.S. companies and SASO include: U.S. companies selling electric lamps must manufacture them in their European subsidiaries; U.S. made room air conditioners are no longer sold in Saudi Arabia; and U.S. made adhesive electrical insulator tapes can no longer be brought into Saudi Arabia.[39]

Concern has been expressed over the implications of exclusively foreign influence on SASO's future standards development activities. By 1986, SASO had developed 450 mandatory standards, but thousands remain to be set. Meanwhile, Saudi Arabia represents a huge and growing export market for the U.S. -- the Saudis bought $3.4 billion worth of American goods in 1987. Furthermore, SASO standards will be adopted by a regional standards organization, the Gulf Cooperation Council (GCC), which is composed of Saudi

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[37]MacKay, D. R. and J. A. Thomas. Report of Visit to the Saudi Arabian Standards Organization and Proposal to Provide Technical Assistance to the Saudi Arabian Standards Organization. 1987. p. 1.

[38]Wunder, Edward J. Regional Manager, Saudi American General Electric Co. Private communication, Dec. 9, 1988.

[39]Ibid.

Arabia, Bahrain, Kuwait, Oman, Qatar, and United Arab Emirates.[40] GCC countries represent an annual market of more than $5 billion worth of American goods.

Saudi Arabia has requested the U.S. Government, particularly NIST, to send a standards expert to work in SASO along with the standards people from other countries. However, NIST lacks the resources (both manpower and budget) to send a NIST employee to work fulltime at SASO. An amendment offered by Congressman Dymally to the NIST Authorization Act for FY 1989 (P.L. 100-519) requires NIST to establish a pilot program "to assist other countries in the development of their domestic standards which are compatible with standards in general use in the United States." According to the legislation, "after the program is established, it shall be funded through voluntary contributions from the private sector to fully reimburse the United States for expenses incurred during fiscal years 1989 and 1990."

A pilot program is now being developed to address the SASO situation. The American/Saudi Roundtable is coordinating efforts to raise private sector money for the program. According to Gilbert Dwyer, President of the Roundtable, a three person panel of standards experts will hire the candidate from the private sector. NIST will give the person government credentials, will provide oversight of his performance; and will act as a contact point to

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[40]MacKay, D. R. and J. A. Thomas. Report of Visit to the Saudi Arabian Standards Organization and Proposal to Provide Technical Assistance to the Saudi Arabian Standards Organization. 1987. p. 1.

disseminate information back and forth from industry to Riyadh.[41] To date, fund raising has been slow. The Roundtable has raised about $85,000, which is about one third what is necessary to fund a U.S. representative in Saudi Arabia for one year. By contrast, West German industry raised $5 million in 20 days to establish a standardization program in China.[42]

Industrialized Countries and Third World Standardization

Saudi Arabia is not the only country receiving standards input from industrialized countries. Many other developing nations are seeking standards expertise as their export needs expand. Western European nations have always been very oriented towards providing standards assistance to developing countries. For example a 1970 study prepared for the Economic Council and the Science Council of Canada reports that:

> . . . France has for years arranged training courses for technicians from [former colonies and other French-speaking countries] in which the importance of French Standards is made clear. West Germany has established what amounts to an "engineering peace corps" for promoting their export trade in Africa and South America.[43]

The effects of this orientation are apparent. For example, an official of the Brazilian Technical Standards Association (ABNT) reports that the ABNT has developed effective working relationships with both French and German

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[41]Dwyer, Gilbert. American/Saudi Roundtable. Private communication, Dec. 14, 1988.

[42]Hayes, John R. Who sets the standards? Forbes, April 17, 1989. p. 112.

[43]Legget, Robert F. Standards in Canada. December, 1970. p. 216.

national standards organizations.[44] In India, a burgeoning telecommunications market, Europeans have reportedly spent over $16 million equipping a laboratory to certify that locally made telecommunications components meet European specifications.[45] In another instance, the Deutsches Institut fur Normung (DIN), the national standards organization of West Germany, has an ongoing cooperative agreement with China. DIN has translated 5000 of its standards into Chinese, and has prepared material to be used in the training of Chinese standards engineers and as aids in the practical implementation of standardization.[46]

DIN, as well as most other Western European standards organizations, are run by the private sector, but receive some government funding and are recognized by their governments as an official national standards organization. Additionally, government agencies play an active role in maintaining technical standards assistance for developing countries. For example in West Germany, the PTB (Federal Agency for Standardization and Precision Measurement) conducts exchange programs with other countries, routinely receiving visitors from Mexico, Argentina, Indonesia, China and others countries; while PTB employees travel overseas for periods ranging from one week to one year to provide standards assistance to other nations. Travel is funded by the West

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[44]Cotrim, Alberto. Standards Writing in Brazil. ASTM Standardization News, Jan. 1987. p. 43.

[45]Hayes, John R. Who sets the standards? Forbes, April 17, 1989. p. 112.

[46]Reihlen, Helmut. The Deutsches Institut Fur Normung (DIN). ASTM Standardization News, December 1986. p. 31-32.

German government, usually by the Foreign Ministry or Research Ministry depending on the specific program.[47]

In Japan, also, the government funds activities designated to support standardization in developing countries. Government cooperation with developing countries in standardization is mainly financed by the Japanese International Cooperation Agency (JICA).[48] According to the Japanese External Trade Organization (JETRO):

> Japan, primarily through its government, has established training courses for the developing countries covering industrial standardization, quality control, certification systems, inspection systems, etc. . . . It welcomes trainees from numerous countries around the world, dispatches specialists overseas for technical cooperation for standardization, and supplies materials for the same. Japan has presented JIS [Japan Industrial Standards] written standards to all member countries of the ISO and IEC.[49]

India has established a program to assist lesser developed countries in organizing and coordinating their standardization programs. The Bureau of Indian Standards (BIS) conducts an annual eight week International Training Program in Standardization for Developing Countries. To date, 288 technical personnel from 41 developing countries of Asia, African and Latin America have participated.[50]

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[47]Jahn, Berndt. Embassy of the Federal Republic of Germany. Private communication, Dec. 8, 1988.

[48]Japanese Industrial Standards Committee. Industrial Standardization in Japan: 1987. p. 29.

[49]Japan External Trade Organization. Guide to Japan's Technical Regulations: Part 1. JETRO, 1986. p. 6.

[50]Paramesvar, K.R. and M. Raghupathy. Standardization in India. ASTM Standardization News, August 1988. p. 47.

How does foreign involvement in Third World standardization compare with that of the U.S.? The American National Standards Institute (ANSI), for example, currently does not have the funds to conduct bilateral standardization programs with developing countries.[51] Walter Leight of NIST has characterized U.S. efforts in the following way:

> For the most part, U.S. standards assistance to developing countries can be described as sporadic and piecemeal, given in response to specific requests and severely limited by the lack of adequate, dedicated resources. From time to time, U.S. companies have engaged in business enterprises abroad and have left behind a body of U.S. standards and familiarity with their use. ISO member bodies have received sets of American National Standards, along with sets of other national standards, and ASTM offers reciprocal memberships, with a complete set of the Annual Book of ASTM Standards, to standards organizations in many parts of the world. Training sessions have been conducted at ASTM, NBS, and in other countries, generally limited in time and in numbers of participants. NBS has visited standards bodies in Jamaica, Peru, Egypt, and elsewhere to assist with specific problems or to enhance local capabilities.[52]

A detailed look at Federal involvement in international standardization activities will be presented in the next chapter of this report.

International Standards and Developing Countries

Many developing countries adopt international standards as their national standards. China, for example, has based 40 percent of its national standards on international standards.[53]More and more developing countries are joining

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[51]Smith, Daniel W. Director of International Operations, American National Standards Institute. Private communication, April 14, 1989.

[52]Leight, Walter G. Standards and the Economy Worldwide. ASTM Standardization News, Jan. 1986. p. 49.

[53]U.S. Department of Commerce. National Bureau of Standards. A Review of U.S. Participation in International Standards Activities. NBSIR 88-3698, January 1988. Washington, 1988. p. 20.

ISO and IEC, although the standards development work continues to be exclusively performed by the technologically experienced industrialized countries. According to NIST:

> The contributions of developing countries to the technical work of ISO and IEC may be limited, but these countries are greatly interested in the resultant international standards as they become available. Standards represent a politically and economically neutral transfer of technology of significant importance to them. This is a primary reason why developing countries adopt international standards. Developing countries lack the industrial and economic infrastructure needed to establish their own standards development system, so they look to ISO/IEC to broaden their limited industrial and technological base in their evolving international trade activities.[54]

Western European countries have adopted many more international standards as their own national standards than the United States. For this reason, Western European countries are more likely than the U.S. to promote the use of international standards in developing countries. An example of this can be seen in Saudi Arabia, where a newly proposed standard for factory built assemblies of low voltage control and switch gears is based on IEC standards. If published as drafted, it will preclude U.S. made control panels and switch gear meeting ANSI standards from being imported into Saudi Arabia.[55]

Thus, U.S. participation in ISO and IEC can, in an indirect way, affect U.S. standardization interests in developing countries that adopt international standards. It should be noted, however, that developing countries are under

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[54]Ibid., p. 15.

[55]Wunder, Edward J. Regional Manager, Saudi American General Electric Co. Private communication, Dec. 9, 1988.

no obligation to adopt international standards. The GATT Standards code recognizes this explicitly:

> Parties recognize that, although international standards may exist, in their particular technological and socio-economic conditions, developing countries adopt certain technical regulations or standards, including test methods, aimed at preserving indigenous technology and production methods and processes compatible with their development needs. Parties therefore recognize that developing countries should not be expected to use international standards as a basis for their technical regulations or standards, including test methods, which are not appropriate to their development, financial and trade needs.[56]

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[56]The Agreement on Technical Barriers to Trade (the Standards Code). Article 12.4.

V. INTERNATIONAL STANDARDIZATION AND THE FEDERAL GOVERNMENT

This chapter characterizes the Federal Government's participation in international voluntary standardization activities. Particular attention will be given to the role of NIST. Legislative authority for many Federal agency activities in international standardization derives from the Trade Agreements Act of 1979 (P.L. 96-39). Executive branch guidelines for agency participation in voluntary standardization bodies, both national and international, are set forth in OMB Circular No. A-119.

ROLE OF NIST IN IMPLEMENTING THE TRADE AGREEMENTS ACT OF 1979

The Trade Agreements Act of 1979 implements the GATT Standards Code in the United States. The act designates four government agencies to oversee implementation of the Code: The Office of the U.S. Trade Representative (trade policy); the Department of Commerce (domestic policy, inquiry point, and technical office for non-agricultural products); the Department of State (foreign policy); and the Department of Agriculture (technical office for agricultural products).

Title IV of the Trade Agreements Act directs the Secretary of Commerce to establish a standards information center, a technical office for nonagricultural product standards, and the official U.S. "inquiry point"[57] for the GATT Standards Code. The NIST Office of the Associate Director for

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[57]The U.S. inquiry point informs the GATT Secretariat in Geneva of proposed U.S. Federal Government regulations and receives and disseminates notifications of proposed foreign regulations to U.S. industry and to other U.S. Federal and state agencies.

Industry and Standards (ADIS) has implemented these programs through its Office of Standards Code and Information (SCI).

NIST's budget for performing the duties mandated by the Trade Agreements Act is about $700 thousand per year. During 1987, SCI activities included the following:

- Reported six proposed U.S. regulations to GATT Secretariat;
- Received 193 notifications of foreign regulations, which were disseminated to the private sector;
- Responded to 291 domestic and foreign letter and telephone requests for GATT notification information
- Received requests for translations of nine foreign regulations, also coordinated the translation of eleven other standards-related documents;
- Maintained the National Center for Standards and Certification Information (NCSCI), a national repository for some 250,000 standards documents, which were used to respond to more than 4,000 requests from all over the world on the existence, source and availability of standards and related documents;
- Provided technical support to the U.S. Trade Representative for the U.S.-Canada Free Trade Area Agreement; and

- Received and processed formal comments from U.S. exporters on four foreign regulations which were felt to impede trade, transmitted comments to the appropriate foreign governments.[58]

Obviously, the effectiveness of NIST's information dissemination programs depends largely on industry's awareness of NIST services, and the extent to which industry uses these services. Interestingly, Canada's Standards Information Service, which serves an economy much smaller than the United States and which operates on a budget roughly equivalent to NIST's, receives 8500 standards information requests per year (including agricultural standards requests).[59] This is considerably more than the number received by NIST (see above) and by the Department of Agriculture's Technical Office (over 600 requests per year).

In addition to SCI, there are four other activities in the Office of the Associate Director for Industry and Standards. These are: the Office of Weights and Measures, the Office of Standards Management, the National Voluntary Laboratory Accreditation Program, and the Office of Research and Technology Applications. The total annual budget for ADIS is approximately $3 million. For further description of the various activities of these offices and programs, see the NIST/NBS publication, *Functions of the NBS Associate Director for Industry and Standards* (NBSIR 87-3623, August 1987).

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[58]U.S. Department of Commerce. National Bureau of Standards. GATT Standards Code Activities of the National Bureau of Standards 1987. NBSIR 88-3747. March 1988. Washington, 1988. p. 2-6.

[59]Thompson, Diane. Standards Information Service, Ottawa, Canada. Private communication, April 5, 1989.

NIST, STANDARDIZATION, AND DEVELOPING COUNTRIES

NIST's budget is clearly too small to directly support standardization assistance programs for developing countries. However, NIST has provided such assistance when these efforts have been funded through other sources.

For example, during the sixties and seventies, the Agency for International Development (AID) funded a series of NBS standardization projects for developing countries. At a 1971 conference on standardization in less developed countries, an AID official remarked:

> In the past there have been occasional requests from developing countries for assistance in building their standards capabilities, and AID has drawn on the outstanding capabilities of the National Bureau of Standards to respond. For example, between 1963 and 1967, NBS provided substantial help, in a variety of forms, for development of the Colombian Standards Institute; and an NBS team sent to Korea in 1967 developed recommendations that have been applied successfully by that country. However, such efforts have been few and scattered, and they have dealt with fragments of the overall standards problem.[60]

During the seventies the NBS/AID program (funded through AID's Office of Science and Technology) consisted of a variety of activities including: workshops and seminars, surveys, laboratory training, consultation, equipment specification, long-term institutional development, and standards literature distribution. In the survey program, NBS sent teams of NBS people to selected countries to examine standardization capabilities and needs. Survey teams were sent to Ecuador, Turkey, Thailand, Bolivia, Philippines, Guyana,

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[60]Remarks of Joel Bernstein, Bureau for Technical Assistance, Agency for International Development. In: U.S. Department of Commerce. National Bureau of Standards. Metrology and Standardization in Less-Developed Countries: The Role of a National Capability for Industrializing Economies. NBS Spec. Pub. 359, December 1971. Washington 1971. p. 2.

Indonesia and Sudan, and Korea. Some of these surveys led to significant progress. For example in Korea, the NBS/AID survey conducted in 1972 was used to help formulate the development of the Korea Standards Research Institute (K-SRI) in 1975.[61]

Also through the NBS/AID program, ANSI standards were sent to six countries and ASTM standards were sent to 29 countries. A series of standardization workshops were held, attended by representatives from 37 countries and three international standards organizations. And, long term institutional development arrangements were established with standards laboratories in Korea and Brazil.[62]

At a 1977 seminar reviewing the NBS/AID program, an NBS official pointed out the difficulty of assessing the program's impact on trade:

> I believe the most important thing that we have not learned is whether the United States and the developing countries really are better trading partners because of this program. There is no doubt, looking at the statistics, that there has been during the past six years an enormous increase in trade between the United States and many of the participants. How much of this increase could we attribute to the activities of the National Bureau of Standards? It would be very helpful if we could find that some of this increase was due to the NBS program but I don't know how we can trace a causal relationship.[63]

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[61]Jong Wan Choi, Korean Ministry of Commerce and Industry. In: U.S. Department of Commerce. National Bureau of Standards. The Technological Knowledge Base for Industrializing Countries. NBS Spec. Pub. 543, April 1979. Washington 1979. p. 37.

[62]Brady, Edward L. Six Years of NBS/AID Programs. In: U.S. Department of Commerce. National Bureau of Standards. Standardization in Support of Development. NBS Spec. Pub. 507, May 1978. Washington, 1978. pp. 9-20.

[63]Remarks of Edward Brady, Associate Director for Information Programs, National Bureau of Standards. In: U.S. Department of Commerce. National Bureau of Standards. Standardization in Support of Development. NBS Spec.

The NBS/AID program did not extend past the 1970's, although AID continues to fund U.S. participation in overseas standardization projects run by international organizations such as the World Bank. Using other funding sources, NBS was involved in a few standards development activities for lesser developed countries during the 1980's. For example, in 1985 the Organization of American States sponsored an NBS on-site assessment of the standards information capability of the Jamaica Bureau of Standards. However this project and others (trips of NBS personnel to Turkey in 1987 and Saudi Arabia in 1988 for example) have been very limited in scope, usually involving a short visit by NBS staff followed by written assessments and recommendations addressing the country's standardization needs.

Section 112 of the NIST Authorization Act for FY1989 (P.L. 100-519) seeks to substantially widen the scope of NIST's assistance to developing countries in the area of standardization. As discussed earlier in this report, P.L. 100-519 directs NIST to establish a privately funded pilot program to "assist other countries in the development of their domestic standards," and in response to this legislation NIST is currently working with the American/Saudi Roundtable to send a U.S. representative to the Saudi Arabian Standards Organization.

In addition, the Act requires the Secretary of Commerce to submit to Congress a long term plan for assisting "each nation or group of nations which annually has imports of at least $1,000,000,000 from the United States (or has the potential for being a major importer from the United States) and

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Pub. 507, May 1978. Washington 1978. p. 17.

which desires such assistance." The Act specifies that the plan shall include a description of the resources needed to provide such assistance, the appropriate and likely sources of such funds, and the appropriate relationship between the program established under this section and private sector standards organizations. Special consideration is to be given to the feasibility of establishing a data base and other methods for making standards information developed in cooperation with one country available to other countries.

OMB CIRCULAR NO. A-119

OMB Circular No. A-119, entitled "Federal Participation in the Development and Use of Voluntary Standards," was issued on November 1, 1982 and provides general guidelines for Federal involvement in voluntary standardization activities. It applies to all executive agency participation in voluntary standards activities, domestic and international, but not to activities carried out pursuant to treaties and international standardization agreements. The circular says that it is policy of the Federal Government to participate in voluntary standards bodies only when such support "is clearly in furtherance of an agency's mission and responsibility." More specifically, agency participation should be "aimed at contributing to the development of voluntary standards that will eliminate the necessity for development or maintenance of separate government standards."

The types of agency support can include direct financial support, administrative support, technical support, and participation by agency representatives in voluntary standards bodies. However the total amount of

Federal support should be "no greater than that of all private sector participants in that activity except when it is in the direct and predominant interest of the Government to develop a standard or revision thereto and its development appears unlikely in the absence of such support."[64]

Thus, while the Federal Government does not provide general subsidies for ANSI's participation in ISO and IEC, agencies can and do participate in specific international technical committees and subcommittees when participation is mandated by the agency mission. Agency personnel participate on an equal basis with industry representatives through committees or working groups organized by domestic private standards organizations such as ANSI or ASTM. Agencies have also awarded grants to private sector standards organizations to assist their participation in international organizations. For example, in 1987 the State Department awarded $35,000 to the National Information Standards Organization (NISO) to help it carry out its responsibilities in the ISO Technical Committee on Documentation (TC 46). TC 46 develops standards for practices related to libraries, documentation and information centers, indexing services and information science. Portions of the grant were used by NISO to send U.S. delegates to TC 46 meetings.[65]

In 1987, 488 Department of Commerce staff (mostly NBS) participated in outside standards committees of 237 (166 domestic, 71 international) standards

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[64]Office of Management and Budget. Federal Register, v. 47, no. 211, Nov. 1, 1982. p. 49498.

[65]American National Standards Institute. Government Grants to Fund Standards Efforts. ANSI Reporter, March 27, 1987, p. 3.

developing organizations.[66] NBS personnel participated on 29 ISO and 6 IEC technical committees and subcommittees. This participation reflects the diverse fields and pursuits of NIST researchers; in most cases, these activities are quite distinct from the activities of the Associate Director for Industry and Standards. For example, researchers from NIST's Center for Fire Research are delegates to an ISO technical committee dealing with fire tests on building materials; scientists in NIST's Institute for Materials Science and Engineering participate on the committees for metallic and other non-organic coatings.[67] While OMB Circular No. A-119 encourages agencies to participate in mission-relevant international standardization activities, it acknowledges that participation should be compatible with the agency's authorities, priorities, and budget resources.

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[66]U.S. Department of Commerce. National Bureau of Standards. Directory of DOC Staff Memberships on Outside Standards Committees. January 1988. Washington, 1988. p. 1.

[67]Ibid., p. 87-92.

VI. DISCUSSION AND CONCLUSIONS

FEDERAL INVOLVEMENT

How, if at all, should the Federal Government support U.S. voluntary standardization interests in the international arena? The current and potential difficulties of some American exporters in Saudi Arabia (which precipitated Section 112 of P.L. 100-519) has focused attention on NIST's role in assisting developing countries with their standardization efforts. Some observers feel that the legislation should be viewed as a first step towards more active and direct Federal support for international standardization activities. They point out that other industrialized nations are providing far more standards assistance to lesser developed countries than is the United States. Furthermore, most foreign governments subsidize their respective national standardization bodies' participation in international standards organizations; the U.S. Government does not. While voluntary standards are primarily the responsibility of the private sector, they argue, more government assistance is needed to help U.S. companies (particularly smaller companies) adequately represent their interests in foreign and international standardization forums. If government assistance is not forthcoming, they believe the consequences could be severe. In his statement urging passage of the international standards amendment to the NIST Authorization bill, Congressman Dymally cited requests for standardization assistance from China, Brazil, India, and Saudi Arabia. He argued that these countries represent a significant export market, and warned that:

> If the National Institute of Standards and Technology does not respond positively to these requests, only our competitors will. This will ensure America's declining share and eventual exclusion from these markets. European and Asian standards will prevail -- thus increasing the price and depressing the utility of American goods in these markets.[68]

There is general agreement that the United States can't afford to ignore standards making in other countries or in international forums. At issue is the role the Federal Government should play in supporting these efforts. Those urging restraint point out that while it is true, for example, that Western European governments provide more support for their industrial standardization activities than does the U.S., it is also true that Western European countries have a much higher percentage of GNP attributable to exports of manufactured products than the U.S. For example, exports make up 30 percent of West Germany's gross national product, as compared to 6 percent in the United States.[69] Thus, one could argue that the West German industry and government place a justifiably higher priority on international standardization activities than their counterparts in the U.S.

Other arguments touch on the feasibility and appropriateness of government involvement. For example, one argument against NIST ultimately funding a standards development program for lesser developed countries is the problem of choosing which countries and which group of American exporters to assist. Standardization affects thousands of industries and markets. How

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[68]Dymally, Mervyn M. Remarks in the House. Congressional Record, Daily Edition, v. 134, Sept. 26, 1988. p. H8282-H8283.

[69]Reihlen, Helmut. The Deutsches Institut fur Normung (DIN). ASTM Standardization News, December 1986. p. 30.

does NIST develop criteria to decide who receives help? Some worry that interest groups and political considerations might have undue influence on these decisions. According to NIST, the best criterion is to implement programs that outside groups are willing to pay for themselves. This is the approach now being used in the program to provide assistance to SASO, in which American exporters to Saudi Arabia are trying to raise the necessary funds.

Another criticism of Federal involvement in standardization of the sort envisioned by section 112 of the NIST Authorization is that it could open up a "pandora's box" of problems and set some troublesome precedents. Critics worry that bilateral standardization agreements between the United States and developing countries could undercut the principle of international standardization by consensus as promoted by organizations such as ISO and IEC. A counter to this argument would be that international standards have limited stature in the real world, and that standardization agreements between developing countries and other industrialized nations are already a "fait accompli." The GATT Standards Code states that developing countries should not be expected to use international standards as a basis for their own technical regulations and standards, if the international standards are not appropriate to their development, financial, and trade needs.

There is also the issue of Federal intervention in voluntary standardization, which in the United States, is a private sector activity. Some caution that government funding of standardization activities could lead to undue government control over these activities. This issue surfaced in the

seventies, when Congress considered several pieces of legislation concerned with international standards. For example, the International Voluntary Standards Cooperation Act of 1973 (S. 1761), which was introduced to the 93rd Congress at the request of then Secretary of Commerce Dent, authorized grants "to assist any private nonprofit organization in the performance of international standardization activities." However, as a condition to receiving grant money, the bill specified that "such arrangements shall include guidelines for private organizations representing United States interests in international standardization activities under this Act to insure that the negotiating positions of such organizations will be in the public interest and shall provide a reasonable opportunity to the Secretary or his designee to review the proposed negotiating positions of such organizations to determine that they are in the public interest." While S. 1761 and similar bills were never enacted, it did raise the question of whether government funding and government control can or should be separated.

Those wary of government funding of voluntary standards activities point to OMB Circular A-119 which strongly implies that Federal agencies should not play a dominant role. Government intervention, they argue, could circumvent the consensus mechanisms already set up by private standards organizations such as ANSI and ASTM, which ensure that all interested and affected parties get the opportunity to influence standards decisions.

ISSUE OF FUNDING

Further Federal support for international standardization activities, should it be deemed necessary by Congress, would require funding. There is,

in fact, legislative authority for the Federal Government to support these kind of activities. According to Section 415 of the Trade Agreements Act of 1979 (P.L. 96-39), the Secretary of Commerce or the U.S. Trade Representative has the authority to provide contracts and grants to ensure "adequate United States representation in international standards-related activities." Some important limitations are attached to this authority. The legislation stipulates that financial assistance from the Federal Government shall not exceed 75 percent of the total cost of the program or activity. Additionally, any money spent under this law must be "provided in advance in appropriation Acts." Since passage of P.L. 96-39, Congress has appropriated no money for contracts and grants under Section 415.

The NIST Authorization Act for FY 1989 directs NIST to develop a program to protect U.S. industry interests in international standardization. Obviously, NIST is an appropriate agency to develop such a program, given its past and present activities, its expertise, and its mission[70]. However, NIST's standards budget is limited, approximately $1.5 million per year. Nearly half of this money is used to implement the GATT Standards Code agreement in the United States. If Congress decided in the future, that an expanded standards assistance program is needed, additional funding would have to be obtained in some manner.

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[70]NIST's mission was redefined in the Omnibus Trade and Competitiveness Act of 1988 (P.L. 100-418). The legislation directs NIST to "modernize and restructure that agency to augment its unique ability to enhance the competitiveness of American industry."

One option is through the NIST budget, either by increasing the NIST budget or diverting funds from other NIST activities. Another option is for other agencies within the Department of Commerce to fund a NIST program. The International Trade Administration (ITA), with a budget of approximately $170 million, engages in a number of export promotion activities abroad. The mission of the ITA, as stated in the Administration's 1990 budget proposal is "to develop the export potential of U.S. firms in a manner consistent with national security and foreign and economic policy and to promote an improved trade posture for U.S. industry." One option might be for ITA to support NIST programs to assist U.S. industry represent their standardization interests in foreign markets.

Federal agencies other than the Commerce Department also have an interest in international standardization issues. These include those cited in the Trade Agreements Act of 1979: the U.S. Trade Representative, the Department of State, and the Department of Agriculture. Additionally, the Agency for International Development (AID) might have an interest in funding a NIST standards assistance program. As mentioned earlier in this report, AID funded numerous NBS international standardization programs in the sixties and seventies.

Some would see a disadvantage in relying on an outside agency, such as AID, to fund a standards assistance program in that the funding agency necessarily has control over program objectives. Obviously, other agencies have missions different than the NIST and Commerce Department mission of contributing to U.S. economic competitiveness. For example, the AID/NBS

program was less geared towards export and trade issues, and more focused on Third World development. At a 1977 seminar on the AID/NBS program, an AID official acknowledged that "the objective of the AID programs is to promote the social and economic development of the country, as well as the quality of life of the people. The emphasis is not on trade except as it has an impact on these basic factors."[71] Relying on outside agency funding might also be subject to shifting priorities, goals, and budget constraints of the sponsoring agency.

Currently, voluntary contributions are being solicited from industry to fund a NIST standards assistance program. While such an approach conserves Federal funds, it also raises potential problems. How would NIST insure that a program funded by one industry or group of companies not adversely affect the standards interests of another industry? For example, if a program were funded by voluntary contributions, and if funds were raised solely by manufacturers, would the standards interests of user industries be properly represented?

CONCLUDING REMARKS

The complexity and diversity of standardization and standards issues is daunting. While it is true that standards can, in some cases, be used as a trade barrier, it is also true that standards serve to facilitate trade and

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[71]Remarks of Henry Arnold, Office of Science and Technology, Agency for International Development. In: U.S. Department of Commerce. National Bureau of Standards. Standardization in Support of Development. NBS Spec. Pub. 507, May 1978. Washington 1978. p. 19.

commerce. The magnitude of their affect on trade as compared to other factors is difficult, if not impossible, to quantify.

As with most areas of technology and industrial policy, foreign governments play a more active role than the U.S. Government in supporting voluntary standardization activities, both domestically and internationally. Other developed countries subsidize their member bodies in international standards organizations such as ISO and IEC. In general, the industries and governments of other industrialized nations provide more standards assistance to developing countries than the U.S. Should Federal efforts in this area be expanded?

In the U.S. voluntary standards are managed by a diverse, scattered, and largely uncoordinated network of private sector entities. Some industries and companies actively participate in the international standardization process. Some do not. Similarly, some industries and companies promote their standards in developing countries, while others do not. In some industries, U.S. voluntary standards still enjoy wide use throughout the world. From a private sector point of view, some worry that expanded government support for voluntary standards activities, would mean undue government influence and control over voluntary standardization. There is also the issue of whether supporting private sector standards activities is an appropriate use of Federal funds, especially in times of high budget deficits. Is it the responsibility of industry to look after its standards interests in the international arena? Furthermore, given that foreign exporters to the U.S. must modify their products to meet U.S. standards, is it unreasonable to

expect U.S. exporters to modify their products to meet foreign or international standards?

On the other hand, if in some cases industry cannot adequately represent their standards interests (and cannot afford to modify their products to meet foreign standards), should the government step in? The balance between government support for and government control over these programs could be an important issue in determining the future Federal role in international voluntary standardization activities.